

IN THE CLAIMS:

Please amend claims 2, 4-11, 13, and 18-22 as follows.

1. (Original) A method of manufacturing a doped X-Ba-Cu-O material, the method comprising the steps of:

- a) mixing an X-Ba-L-O or X-Ba-Cu-L-O material with an X-Ba-Cu-O material; and
- b) crystallising the mixture;

wherein

each X is independently selected from a rare earth (Group IIIB) element, yttrium, a combination of rare earth elements, or a combination of yttrium and a rare earth element; and each L is one or more elements selected from U, Nb, Ta, Mo, W, Zr, Hf, Ag, Pt, Ru and Sn.

2. (Currently Amended) A method of manufacturing a doped X-Ba-Cu-O material as claimed in Claim 1 wherein the X-Ba-Cu-L-O and X-Ba-L-O material comprise material of general formula:

$XwBaxCuyLtOz$

wherein each X and L is as defined hereinabove; and wherein

w is 1 to 4; x is 1 to 6; y is 0 to 4; t is 0.3 to 2; and z is 3 to 20.

3. (Original) A method of manufacturing a doped X-Ba-Cu-O material as claimed in Claim 1 wherein the X-Ba-Cu-O material comprises material of the general formula

XaBabCucOd

wherein each X is as defined hereinabove, and wherein

a is 1 to 4; b is 1 to 6; c is 0.5 to 4; d is 3 to 20.

4. (Currently Amended) A method of manufacturing a doped X-Ba-Cu-O material as claimed in Claim 1, ~~2-OR-3~~ wherein each X is independently selected from one or more of Y, Nd, Sm, Ga, Eu and Ho.

5. (Currently Amended) A method of manufacturing a doped X-Ba-Cu-O material as claimed in ~~any preceding~~ claim 1 wherein w is 1, 2 or 3; x is 2 to 4; y is 0.1 to 1 for X-Ba-Cu-L-O materials; t is 0.5 to 1; and z is 4 to 15.

6. (Currently Amended) A method of manufacturing a doped X-Ba-Cu-O material as claimed in ~~any of Claims 2 to 4~~ claim 2, wherein a is 1, 2 or 3; b is 2 to 4; c is 1 to 3; and d is 4 to 15.

7. (Currently Amended) A method of manufacturing a doped X-Ba-Cu-O material as claimed in ~~any preceding~~ claim 1 wherein the XaBabCucOd is added in step (a) to an amount of at least 50% w/w of the mixture.

8. (Currently Amended) A method of manufacturing a doped X-Ba-Cu-O material as claimed in ~~any preceding~~ claim 1 wherein the XwBaxCuyLtOz is added in step (a) to an amount of at least 0.01% w/w of the total weight of the mixture produced in step (a).

9. (Currently Amended) A method of manufacturing a doped X-Ba-Cu-O material as claimed in ~~any preceding~~ claim 1 wherein the XwBaxCuyLtOz is a solid.

10. (Currently Amended) A method of manufacturing a doped X-Ba-Cu-O material as claimed in ~~any preceding~~ claim 1 wherein the XaBabCucOd is in a molten or liquid form, and/or the method comprises a step prior to step (a) of substantially melting the XaBabCucOd.

11. (Currently Amended) A method of manufacturing a doped X-Ba-Cu-O material as claimed in ~~any preceding~~ claim 1 wherein step (b) comprises single crystallisation.

12. (Original) A method of manufacturing a doped X-Ba-Cu-O material as claimed in Claim 11 wherein step (b) comprises crystallisation as a mixture of XwBaxCuyLtOz in molten XaBabCucOd.

13. (Currently Amended) A method of manufacturing a doped X-Ba-Cu-O material as claimed in Claim 11 ~~or 12~~ wherein step (b) comprises providing in a receptacle a mixture of $XaBabCucOd$ and $XwBaxCuyLtOz$; melting the mixture; providing a seed or key to the receptacle; and subsequently manipulating the temperature of, or in the region of, the seed or key, to induce crystallisation of the molten mixture.

14. (Original) A method of manufacturing a doped X-Ba-Cu-O material as claimed in Claim 13 wherein the $XaBabCucOd$ and $XwBaxCuyLtOz$ is added to the receptacle in solid form and the mixture melted.

15. (Original) A method of manufacturing a doped X-Ba-Cu-O material as claimed in Claim 13 wherein the $XaBabCucOd$ is melted in the receptacle and solid $XwBaxCuyLtOz$ is added to the molten material.

16. (Original) A method of manufacturing a doped X-Ba-Cu-O material as claimed in Claim 13 wherein the seed or key is added to the molten mixture or added prior to melting the mixture.

17. (Original) A method of manufacturing a doped X-Ba-Cu-O material as claimed in Claim 16 wherein the seed or key is preferably a crystal of compatible crystallographic and chemical structure to the $XaBabCucOd$.

18. (Currently Amended) A method of manufacturing a doped X-Ba-Cu-O material as claimed in Claim 16 ~~or 17~~ wherein the seed crystal is the identical XaBabCucOd material or XaBabCucOd material with a different X atom to the XaBabCucOd material being crystallised.

19. (Currently Amended) A method of manufacturing a doped X-Ba-Cu-O material as claimed in ~~any preceding~~ claim 1 wherein the resultant doped X-Ba-Cu-O crystal is annealed at between 400°C and 700°C.

20. (Currently Amended) A method of manufacturing a doped X-Ba-Cu-O material as claimed in ~~any preceding~~ claim 1 further comprising mixing Y2O3 with the mixture produced in step (a).

21. (Currently Amended) A method of manufacturing a doped X-Ba-Cu-O material as claimed in ~~any preceding~~ claim 1 further comprising adding Pt to the mixture produced in step (a).

22. (Currently Amended) A doped material manufactured by the method of ~~any one of Claims 1 to 21~~ claim 1.